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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/754,428	01/09/2004	Jacob Sharony	6000.002700	8413

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EXAMINER

DOAN, PHUOC HUU

ART UNIT	PAPER NUMBER
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2687

DATE MAILED: 11/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/754,428	Applicant(s) SHARONY, JACOB	
	Examiner PHUOC H. DOAN	Art Unit 2687	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 15-29 is/are rejected.
- 7) ☒ Claim(s) 13 and 14 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims **1-2, 7-10, 15-21, and 23-29** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Zegelin (US Pub No: 2004/0266465)** in view of **Sugar (US Pub No: 2004/0023621)**.

As to claim 1, Zegelin discloses a method of calibrating a wireless tracking system (See Abstract), comprising: providing at least one calibration signal using a mobile unit having a first plurality of antennae while the mobile unit is proximate at least one predetermined location (page 1, par. [0012]); receiving a plurality of signals at a second plurality of antennae in response to providing the at least one calibration signal (page 2, par. [0015]); determining a portion of a transmission matrix using the plurality of received signals and the at least one calibration signal (page 2, par. [0016-0017]); and associating the portion of the transmission matrix with the predetermined location (page 2, par. [0016-0017]).

However, Zegelin does not disclose that plurality of antenna transmit by **transmission matrix**.

In the same field of invention, Sugar specifically discloses that plurality of antenna transmit by **transmission matrix** (Fig. 1, page 2, par. [0018] “**the transmission between access point and mobile device with plurality of antennas using the transmit matrix**”). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the plurality of antenna transmit by **transmission matrix** of Sugar to the system of Zegelin in order to provided for simultaneous radio communication of multiple signals.

As to claim 2, the combination of Zegelin and Sugar further disclose the method of claim 1, wherein receiving the plurality of signals comprises receiving a plurality of signals that traveled along different paths from the first plurality of antennae to the second plurality of antennae (Fig. 2, “indicated the transmit antenna paths 1, 2, and N” of Sugar).

As to claim 7, Zegelin further discloses the method of claim 1, wherein providing the at least one calibration signal while the mobile unit is proximate the at least one predetermined location comprises providing a plurality of calibration signals while the mobile unit is proximate each of a corresponding plurality of predetermined locations (page 1, par. [0012]).

As to claim 8, the combination of Zegelin and Sugar further disclose the method of claim 1, further comprising storing the determined portion of the transmission matrix and the associated predetermined locations (page 1, par. [0012] of Zegelin).

As to claim 9, the combination of Zegelin and Sugar further disclose the method of claim 1, wherein storing the determined portion of the transmission matrix and the associated predetermined location comprises storing the determined portion of the transmission matrix and the associated predetermined location in a database (Fig. 2, page 1, par. [0012] “send RSSI/time to server for update correction” of Zegelin).

As to claim 10, Zegelin discloses a method of tracking a mobile unit in a wireless local area network (See Abstract), comprising: receiving a plurality of signals at a first plurality of antennae (page 1, par. [0012]); determining a portion of a transmission matrix using the plurality of received signals (page 2, par. [0016-0017]); and associating the portion of the transmission matrix with a predetermined location (page 2, par. [0016-0017]).

However, Zegelin does not disclose that plurality of antenna transmit by **transmission matrix**.

In the same field of invention, Sugar specifically discloses that plurality of antenna transmit by **transmission matrix** (Fig. 1, page 2, par. [0018] “the

transmission between access point and mobile device with plurality of antennas using the transmit matrix”). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the plurality of antenna transmit by **transmission matrix** of Sugar to the system of Zegelin in order to provided for simultaneous radio communication of multiple signals.

As to claim 15, the combination of Zegelin and Sugar further disclose the method of claim 10, wherein receiving the plurality of signals comprises receiving a plurality of signals provided by a second plurality of antennae (Fig. 3, item 154(2), 110(2) of Sugar).

As to claim 16, the combination of Zegelin and Sugar further disclose the method of claim 15, wherein receiving the plurality of signals comprises receiving a plurality of signals that traveled along different paths from the second plurality of antennae to the first plurality of antennae (page 1, par. [0014-0015] of Sugar).

As to claim 17, the combination of Zegelin and Sugar further disclose the method of claim 15, wherein receiving the plurality of signals provided by the second plurality of antennae comprises receiving the plurality of signals at the first plurality of antenna coupled to an access point and provided by the second plurality of antennae coupled to a mobile unit (page 1, par.

[0014-0016] of Sugar).

As to claim 18, the combination of Zegelin and Sugar further disclose the method of claim 17, wherein determining the portion of the transmission matrix comprises determining a portion of the transmission matrix at the access point (page 2, par. [0017] of Sugar).

As to claim 19, the combination of Zegelin and Sugar further disclose the method of claim 15, wherein receiving the plurality of signals provided by the second plurality of antennae comprises receiving the plurality of signals at the first plurality of antennae coupled to at least one mobile unit and provided by the second plurality of antennae coupled to an access point (page 1, par. [0014-0015], page 2, par. [0017-0018] of Sugar).

As to claim 20, the combination of Zegelin and Sugar further disclose the method of claim 19, wherein determining a portion of the transmission matrix comprises determining the portion of the transmission matrix at the mobile unit (page 3, par. [0037-0038] of Sugar).

As to claim 21, the combination of Zegelin and Sugar further disclose the method of claim 20, further comprising providing the determined portion of the transmission matrix to the access point (page 2, par. [0018-0022] of Sugar).

As to claim 23, the combination of Zegelin and Sugar further disclose the

Art Unit: 2687

method of claim 10, wherein receiving the plurality of signals at the first plurality of antennae comprises receiving a plurality of signals having a substantially common frequency at the first plurality of antennae (page 2, par. [0019] of Sugar).

As to claim 24, the combination of Zegelin and Sugar further disclose a method of claim 10, further comprising estimating a location of the mobile unit in response to associating the portion of the transmission matrix with the predetermined location (page 1, par. [0012] of Zegelin).

As to claim 25, Zegelin further discloses the method of claim 24, further comprising providing location-dependent information to the mobile unit using the estimated location of the mobile unit (page 1 through page 2, par. [0012-0013]).

As to claim 26, the claim specifies the apparatus necessary to perform the method steps as specified in **claim 1** and is therefore rejected for the same reasons.

As to claim 27, the combination of Zegelin and Sugar further disclose the network of claim 26, wherein the access point is further capable of associating the portion of the transmission matrix with the predetermined location using a portion of at least one stored transmission matrix (page 1, par. [0012] “**the system may be initially calibrated to form a database**”

Art Unit: 2687

of Zegelin), and wherein the portion of the at least one stored transmission matrix is associated with the predetermined location (page 2, par. [0013] of Zegelin).

As to claim 28, the combination of Zegelin and Sugar further disclose the network of claim 26, wherein the access point is further capable of estimating a location of the mobile unit in response to associating the portion of the transmission matrix with the predetermined location (page 1 through page 2, par. [0012-0013] of Zegelin).

As to claim 29, Zegelin further disclose the network of claim 28, wherein the access point is further capable of providing location-dependent information to the mobile unit using the estimated location of the mobile unit (page 2, par. [0016-0017]).

3. Claims **3-6, 11-12, and 22** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Zegelin (US Pub No: 2004/0266465)** in view of **Sugar (US Pub No: 2004/0023621)** as applied to claim 1 above, and further in view of **Vaidyanathan (US Pub No: 2004/0209579)**.

Art Unit: 2687

As to claim 3, 22, the combination of Zegelin and Sugar do not disclose wherein providing the at least one calibration signal comprises providing at least one pilot signal.

Vaidyanathan specifically discloses wherein providing the at least one calibration signal comprises providing at least one pilot signal (page 7, par. [0094]). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the pilot signal of Vaidyanathan to the system of Zegelin and Sugar in order to embed with symbol fields.

As to claim 4, 11, the combination of Zegelin and Sugar further discloses the method of claim 3, wherein determining the portion of the transmission matrix comprises determining the elements of the transmission matrix (page 2, par. [0017] of Sugar).

As to claim 5, the combination of Zegelin and Sugar further discloses the method of claim 4, wherein determining the elements of the transmission matrix comprises determining the elements of the transmission matrix using the at least one training sequence (page 3, par. [0041] **“a first device passes channel response information to second device by sending a known OFDM training sequence”** of Sugar).

As to claim 6, 12, the combination of Zegelin and Sugar further disclose the

Art Unit: 2687

method of claim 5, wherein determining the portion of the transmission matrix comprises determining at least one of a singular value, an eigenvalue, and an eigenvector of the transmission matrix (page 2, par. [0031] of Sugar).

Allowable Subject Matter

4. Claims 13-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to claim 13, the prior art of record does not disclose the method of claim 10, wherein associating the portion of the transmission matrix with the predetermined location comprises associating the portion of the transmission matrix with the predetermined location using a portion of at least one stored transmission matrix, and wherein the portion of the at least one stored transmission matrix is associated with the predetermined location.

Dependent claim 14 is objected for the same reason.

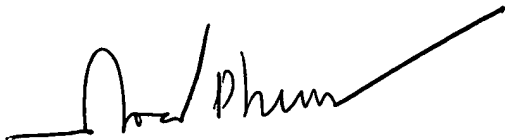
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHUOC H. DOAN whose telephone number is 571-272-7920. The examiner can normally be reached on 9:30 AM - 6:30 PM.

Art Unit: 2687

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, LESTER G. KINCAID can be reached on 571-272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Phuoc Doan
11/06/05


11/29/05
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